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Mikio Ikenishi

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EXAMINER

FALASCO, LOUIS V

ART UNIT

PAPER NUMBER

1785

NOTIFICATION DATE

DELIVERY MODE

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ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/532,863	<b>Applicant(s)</b> IKENISHI ET AL.	
	<b>Examiner</b> LOUIS FALASCO	<b>Art Unit</b> 1785	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 July 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 3,4,16,23-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5-15 and 17-22 with linking claim 1 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This application is acknowledged as a Request for Continued Examination.

#### ***Papers Received***

2. A request for continued examination under 37 CFR 1.114 and fee set forth in 37 CFR 1.17(e) were filed in this application after final rejection. This application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' Remarks and Affidavit filed 07/08/2010 are acknowledged and have been entered.

#### ***Claims***

3. The claims are 1 to 27.

#### ***Election - Restriction of Invention***

4. The claims under consideration remain the previously elected Group II substrate invention - claims 5-15 and 17-22 will remain examined with independent claim 1 - as linking claim only.

- This election was made without traverse, in a 12/19/2008.

5. The claims under consideration remain 5-15 and 17-22 with linking claim 1.

## ***Objections***

6. Linking claim 1 and claims 5-15 and 17-22 are objected to because of the informalities in many chemical formulas of claim 1 where a zero (0) appears for the letter O.

- For the compound  $\text{Al}_2\text{O}_3$ ;  $\text{Na}_2\text{O}$ ;  $\text{K}_2\text{O}$ ;  $\text{ZrO}_2$  and  $\text{Ti}_2\text{O}$  the oxygen notation “O” has been typed as a zero (0) instead of the letter ‘O’.

An appropriate correction is required.

## ***Rejections***

### *Statutory Basis*

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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9. Rejections of claims 6-10, 15 and 22 under 35 USC 103 over **Hashimoto et al** and **Hayashi et al** taken with Maeda et al, and further in view of **Ikenishi et al** (US 2003/0109370), made in the final rejection of 10/08/2009, have been withdrawn.

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*Rejections under 35 U.S.C. 103*

10. Claims 1 (as linking claim), 5, 11-14 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hashimoto et al** (US 6332338) and **Hayashi et al** (US 5900296) taken with **Maeda et al** (US 6297182), for reasons of record.

**Hashimoto et al** is directed to chemically reinforced recording medium substrates that include a  $\text{CaO}$ ,  $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$  and  $\text{Na}_2\text{O}$  content encompassing the glass composition of linking claim 1 (**Hashimoto et al**<sup>1</sup> col. 4 Ins 20-25, 41-64; col. 5 Ins 6-32 and col. 9 Ins 47-54). In **Hashimoto et al** the  $\Sigma$  total for  $\text{SiO}_2 + \text{Al}_2\text{O}_3$  of 57%-80%, encompasses the instant claimed total (**Hashimoto et al** shows  $\text{SiO}_2$  35-65% and  $\text{Al}_2\text{O}_3$  is 9.5-12% col. 5 Ins 56-64, col. 6 Ins 55-58). In **Hashimoto et al** the  $\text{TiO}_2$  and  $\text{ZrO}_2$  and  $\text{ZnO}$  content ranges 0-10%, 0-12% and 0-10% respectively - encompassing the content ranges instantly claimed (**Hashimoto et al**  $\text{TiO}_2$  and  $\text{ZrO}_2$  and  $\text{ZnO}$  content is optimally adjusted for glass melt and transition temperature ( $T_g$ ) at col. 2 In 1, col. 8 In 49, col. 9 Ins 7-10, Table 5 at col. 19 Ins 13-10). **Hashimoto et al** teaches further balancing  $T_g$  with *Young's Modulus* to disk operating system requirements, replacing parts  $\text{Na}_2\text{O}$  with

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$K_2O$ , for glass substrate compositions encompassing the instant claimed ranges (see **Hashimoto et al** col. 6 Ins 6-9 and 24-29). **Hashimoto et al** does not teach the absence of  $Li_2O$  or the addition of  $BaO$  and  $ZrO_2$  in glass substrates.  $Li_2O$  is a strengthening ingredient, and **Hashimoto et al** teaches one of ordinary skill a further addition of  $Na_2O$  to the glass, within that composition claimed in linking claim 1 as a substitute for the presence of  $Li_2O$  to strengthen the substrate (**Hashimoto et al** col. 9 Ins 32-38). **Hayashi et al** teaches the absence of  $Li_2O$  by with increases in  $Na_2O$  encompassing the instant claim amounts (**Hayashi et al** col. 1 lines 63-67). **Hayashi et al** also teaches the  $BaO$  and  $ZrO_2$  additions for reducing vitrification in the glass substrates and to optimally adjust  $T_g$ , the  $BaO$  and  $ZrO_2$  content offsetting  $CaO$  for a  $CaO$  - to -  $SrO$ ,  $ZnO$  and  $TiO_2$  range encompassing the instant levels claimed with  $ZrO_2$  content offset by added  $BaO$  for an optimal balance between durability and hardness with varying  $T_g$  (**Hayashi et al** col. 2 In 4 to col. 3 In 4-10 - at col. 2 Ins 38-39, 46-47 with instantly claimed  $SrO$ ,  $ZnO$  and  $TiO_2$  content ranging from zero to 15, zero to 10 and at zero to 10 respectively).

The ratio of  $CaO$  – to – other components are within that instantly claimed consistent with both **Hashimoto et al** and **Hayashi et al** content [ $CaO : \Sigma$  total

$CaO+MgO+SrO+BaO$ ] less than or equal to 0.5 and a  $\Sigma$  total

$CaO+MgO+SrO+BaO+ZnO$  between 3% and 30% also noted in the previous action.

**Hayashi et al** examples show  $Li_2O$  need not be present to avoid brittleness (**Hayashi et al** col. 3 In 22 and 23 and examples Table 1 col. 5). Additionally **Maeda et al** shows

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<sup>1</sup>  $CaO$  encompassing the claimed 2-25%;  $SiO_2$  within the claimed 47-70%;  $Al_2O_3$  within the claimed 1-

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substrate glass having no having  $Li_2O$  results in improved toughness and resistance to fracture (**Maeda et al** col. 4 Ins 33, 34 and col. 6 Ins 21-35 and examples 1-14 having no  $Li_2O$  noting - Table 1 at col. 5 and 6).

It would have been obvious to one of ordinary skill in the art to adopt **Hayashi et al**, showing the trade off in  $Li_2O$  content and additions of  $BaO$  and  $ZrO_2$ , further with the **Maeda et al** teaching adopting the absence of  $Li_2O$  in substrate glass in the **Hashimoto et al** glass motivated by improvements in substrate toughness and durability (evident in **Hayashi et al** at col. 5 Ins 56- 64 and in **Maeda et al** at col. 1 Ins 6 and 7, demonstrated in examples 1, 2, 3 and 6 of Table 1).

- As regard claims 5, 11 and 19 chemically reinforced substrates, reinforcement has been demonstrated as a well known and a desired convention in the art. It would have been obvious to provide chemically reinforced substrates as strengthened substrates from **Hashimoto et al** col. 8 Ins 33-35 and col. 12 Ins 15 to col. 13 In 5 and examples 1-24 and from **Hayashi et al** col. 4 In 56 to col. 5 In 7 -.
- As regard claims 12-14, 20 and 21 information and perpendicular magnetic recording system substrates, this has been claimed as a preamble *intention for a use*, only claim 21 includes a layer for recording to give weight to these preamble limitations. However the use as recording system substrates would have been *prima facie* obvious as the

substrates are taught for magnetic recording information and perpendicular magnetic recording systems being a conventional magnetic recording system (**Hashimoto et al** – Abstract; **Hayashi et al** - Abstract and **Maeda et al** - col. 2 Ins 35-40).

11. Claims 6-10, 15-18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hashimoto et al** and **Hayashi et al** taken with **Maeda et al** as applied to claims 1, 5, 11-14 and 19-21 above, and further in view of either **Miyamoto et al** (US 2002/0110706) – newly applied.

With regard temperature ranges in these claims, **Hashimoto et al** points out the claimed transition temperature ranges are routinely optimized to system and process requirements by re-heated glass substrates to anneal or lower enthalpy (**Hashimoto et al** col. 4 Ins 18- 21, col. 10 Ins 2-4 and col. 13 Ins 6-9). **Hashimoto et al** and **Hayashi et al** also teach glass substrates as reinforced (**Hashimoto et al** col. 4 Ins 27-36 with previously cited adjustments to  $Na_2O$  &  $Al_2O_3$  and **Hayashi et al** col. 1 Ins 54-65 noting previous levels of  $Na_2O$  &  $Al_2O_3$ ). Though recognized as result-effective in the art, the degrees of re-heating and reinforcement have not been specified by **Hashimoto et al** and **Hayashi et al** taken with **Maeda et al**. It has been held that discovering an optimum value for an effective result involves only routine skill in the art<sup>2</sup>. **Miyamoto et al** similarly directed to chemically reinforced substrates, and teaches optimally controlling glass strength to system requirements using the same potassium and sodium salt

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<sup>2</sup> *In re Boesch*, 617 F. 2d 272, 205 USPQ 215 (CCPA 180).



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components and re-heating up to 400°C which would reasonably be expected to produce the same levels as the substrate products claimed<sup>3</sup> (**Miyamoto et al** ¶[0117], [0127], [0203] et seq. and [0243]-[0244]).

It would have been obvious to one of ordinary skill in the art to adopt **Miyamoto et al** in **Hashimoto et al** and **Hayashi et al** with **Maeda et al** for glass substrates with enhanced strength optimized for magnetic recording media system requirements ranges for stabilized tracking (**Miyamoto et al** including optimal thermal expansion ranges for stabilized tracking at elevated process temperatures shown at ¶[0231-3], [0273]).

- As regard claims 8, 9, 17, 18 and 22 bending strength ratio *prior to* chemical reinforcement and a temperature treatment, this would have been a matter of routine optimization and reasonably expected to be within the claimed ranges in the art recognized the substrate compositions. A prior condition has not been shown to effect the subsequent product<sup>4</sup> as claimed, and with the same composition **Hashimoto et al** and **Hayashi et al** taken with **Maeda et al** (previously cited for composition in above paragraph) the substrates would reasonably be to expect the same properties.
- As regards claims 15, 17 and 22 substrates as a product of heating, this would have been obvious from **Hashimoto et al** steps (**Hashimoto et al** col. 4 lns 19-27) with the further concern for adjustments for thermal expansion by reheating and annealing to reduce thermal stress shown in **Hashimoto et al** at col. 10 lns 1-4, col. 8 lns 25-29.

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<sup>3</sup> MPEP 2113

12. Claims 5-15 and 17-22 with linking claim 1 are rejected under anticipated under 35 USC 102(e) or under 35 U.S.C. 103(a) as obvious over **Ikenishi et al** (US 20030109370)<sup>5</sup>.

**Ikenishi et al** is directed to chemically reinforced recording medium substrates that include  $CaO$ ,  $SiO_2$ ,  $Al_2O_3$  and  $Na_2O$  content within that claimed ( $\P$ [0013], [0014], [0074], [0075] noting also  $Li_2O$  encompassing zero  $\P$ [0049], [0053] examples 7,8, 11-26, 46 and 48-51 having  $Li_2O$  at zero - Tables 1-8). **Ikenishi et al** also teaches re-heating and temperature treatments to reinforcing levels for improvements in strength (**Ikenishi et al**  $\P$ [0073], [0078], [0141], and [0142]). Alternate to anticipation it would have been at least obvious to one of ordinary skill in the art to adopt **Ikenishi et al** as inherently having the same properties with the same composition and a matter of routine optimization for increase strength.

- As regard claims 5, 11 and 19 chemically reinforced substrates, this is anticipated or reinforcement would have been obvious from **Ikenishi et al** at  $\P$ [0078], [0079] demonstrating chemically reinforced.
- As regard claims 12-14, 20 and 21 information and magnetic recording system substrates, this has been claimed as a preamble intention, only claim 21 includes a layer for recording to give weight to these preamble

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<sup>4</sup> MPEP 2113

<sup>5</sup> Should applicant desire to obtain the benefit of foreign priority under 35 U.S.C. 119(a)-(d) prior to declaration of an interference, a certified English translation of the foreign application must be submitted

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limitations. Information and magnetic recording layers on the substrates are taught in **Ikenishi et al** at ¶[0082] and [0119].

- As regard claims 8, 9, 17, 18 and 22 bending strength, this is adjusted in **Ikenishi et al** at ¶[0063], [0079], shown with the examples of the ranges at ¶[0105]-[0111]. Additionally with the encompassing composition ranges and treatments, one would reasonably expect the same properties.
- As regards claims 15, 17 and 22 substrate, a product of heating, **Ikenishi et al** shows this at ¶[0073], [0142], for improvements in strength and reductions in internal stress.

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#### Double patenting

13. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA

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1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

14. Claims 5-15 and 17-22 with linking claim 1 rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-11 of U.S. Patent No. 6818576.

U.S. Patent No. 6818576 claims a glass  $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{CaO}$ ,  $\text{BaO}$ ,  $\text{Na}_2\text{O}$  and  $\text{ZrO}_2$  content and no  $\text{Li}_2\text{O}$ . The specification defines the instant linking claim composition as the presence of  $\text{Li}_2\text{O}$  eliminated from the glass (Patent No. 6818576 where  $\text{Li}_2\text{O}$  is zero - col. 7 Ins 41-44 and col. 14 et seq. and shown in Examples 1-5, 7, 8, 11, 12-26, 32, 45 and 48).

- As regard claims 5, 11 and 19 chemically reinforced substrate, the substrate claimed is *defined* as reinforced by ion replacement in patent 6818576 at col. 11 Ins 35-57.
- As regard claims 12-14, 20 and 21 information and magnetic recording system substrates, this has been claimed as a preamble intention, only

claim 21 includes a layer for recording to give weight to these preamble limitations. However, this is defined in the in patent 6818576 at col. 12 lns 10-26.

- As regard claims 8, 9, 10, 17, 18 and 22 bending strength, the substrate claimed in patent 6818576 has been defined as having the bending strengths and associated  $T_g$  and consequent expansion at col. 9 ln 47 to col. 11 ln 56 and shown with the examples of Tables 1-13. In addition, with the same compositions and treatments one would reasonably expect the same properties.
- As regards claims 6, 7, 15, and 22 substrate and claim 17 portions, a product of heating, the substrate claimed in patent 6818576 has been defined as being a product of heating at col. 10 lns 19-59 and in examples e.g., example 83 at col. 34 lns 20-30 with the strength though ion exchange and  $T_g$  instantly claimed.

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*Response to arguments and Declaration*

Arguments along with the Declaration of the inventor have been considered but are found convincing in overcoming the rejections above largely due to the meets and bounds of the instant claims. Applicants have claimed broad composition range, a

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preamble statement with out limitation of a structure in the body of the claims with no limitations of the substrate shaping process.

15. Only the paragraph 10 rejection of Claims 1, 5, 11-14 and 19-21 is the same as the final rejection to which applicants have directed their arguments and Declaration.

a. Applicants argue and the Declaration declares that there is no basis for a combination of **Hashimoto et al** and **Hayashi et al** as **Hayashi et al** is directed to a float process and **Hashimoto et al** directed to re-heating after the substrate has been formed.

In response, the claims have not been cast as a substrate product that is formed in a by a process distinct from floating or heat molding. As regards the presence of *SrO* / *BaO*, **Hayashi et al** points out *SrO* or *BaO* are merely ingredients that adjust viscosity (**Hayashi et al** col. 12 and 3). The claims under consideration encompass the **Hashimoto et al** and **Hayashi et al** *SrO* and *BaO* levels in the composition, so have not been shown a patentably distinct.

b. Applicants argue and Declare the ingredients that are critical such as *TiO* in the prior art and preform reheating steps and viscosity levels to form a disk shape for recording media differ from the instant invention to form a disk (e.g., pages 5 and 6 of the Declaration).

In response in is noted that no disk shape, or any shape nor product of such methods of production, has been claimed.

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c. Applicants argue and Declare there is no motive to combine references as there would find significant incompatibility with the glass ingredients used in

**Hashimoto et al** and **Hayashi et al**.

In response, each component has been shown to control particular characteristic in substrate glass. Applicants have glass composition range is claimed so broad as to encompass what has apparently been characterized in the Declaration so it has not been found convincing to argue incompatible to have at these extents.

In regard and only claim 21 includes a layer for recording.

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### *Secondary Considerations*

16. Contrasting what has been demonstrated in the instant specification, applicants have demonstrated superior physical properties, surface character and strength for a range of glass components that can not reasonably be extrapolated to what has been claimed.

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17. A comparison the glass substrate compositions shown in the specification at pages 24-31 appear below:

Glass component	Demonstrated superior	Claimed	comment
$SiO_2$	63-65%	47-70%	Effects Young's Modulus & viscosity
$Al_2O_3$ ,	4-5%	1-10%	Durability and thermal resistance
$CaO$	12-13%	2-25%	Thermal expansion levels
$BaO$	3-4%	1-15%	Devitrification property
$Na_2O$	4-5%	1-10%	
$K_2O$	5-6%	0-15%	
$Na_2O + K_2O$	9-10%	3-16%	Viscosity melt and ion exchange
$TiO_2$	3-4% or 0%	0-10%	0% $TiO_2$ results in superior smoothness (ex 10) and flatness (ex 11) when in combination with unclaimed $Sb_2O_3$
$ZrO_2$	4%	1-12%	Young's Modulus, elasticity limits brittleness
total	95-100%	95-100%	

No claim has been found reasonably commensurate in scope with showings of superior characteristics balanced with  $CaO : \Sigma \text{ total } CaO + MgO + SrO + BaO]$  less than or equal to 0.5 and a  $\Sigma \text{ total } CaO + MgO + SrO + BaO + ZnO$  between 3% and 30%. The breadth of the instant claims encompasses products and materials applicants have declared as unsuited for use together to obtain the characteristics.



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### ***Conclusion***

18. The claims are 1 to 27.

- Claims 2-4, 16 and 23-27 remain withdrawn as a non-elected invention
- The claims under consideration remain the previously elected Group II substrate invention - claims 5-15 and 17-22 remain examined with independent claim 1 - as linking claim only.
- The claims under consideration remain 5-15 and 17-22 with linking claim 1.
- No claim has been allowed in this action.

### **INQUIRES**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Louis Falasco, whose telephone number is (571)272-1507. The examiner can normally be reached on M-F 10:30 - 7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Ruthkosky can be reached at (571)272-1291.

The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

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/L. F./  
Examiner, Art Unit 1785

/Mark Ruthkosky/  
Supervisory Patent Examiner, Art Unit 1785